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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/916,390	07/26/2001	Matthew J. Carey	ARC920010091US1	7786

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IBM CORPORATION ALMADEN RESEARCH CENTER  
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EXAMINER

RICKMAN, HOLLY C

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 01/29/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/916,390

Applicant(s)

CAREY ET AL.

Examiner

Holly Rickman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 November 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9, 11-24 and 26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 11-24 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. The objection to claim 6 is withdrawn in view of Applicant's amendments.

### *Claim Rejections - 35 USC § 112*

2. The rejection of claim 11 under 35 U.S.C. 112, second paragraph, is withdrawn in view of Applicant's amendments.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. The rejection of claims 1-5, 7-9 and 12 under 35 U.S.C. 102(e) as being anticipated by Kawato et al. (US 2002/0028356) is withdrawn in view of Applicant's amendments.

5. Claims 1-9 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Shukh et al. (US 2002/0028357).

Shukh et al. disclose a magnetic recording medium having a substrate, an underlayer formed from soft magnetic layers having at least one non-magnetic spacer layer separating adjacent magnetic layers and a perpendicular recording layer thereon. The soft magnetic layers of the underlayer are antiferromagnetically coupled via the spacer layer and the medium also includes a non-magnetic intermediate layer between the uppermost ferromagnetic layer and the perpendicular magnetic layer (p. 2, paragraph 24 to p. 3, paragraph 29).

6. The rejection of claims 1-5, 7-9, 12-13, 15-20, and 22-24 under 35 U.S.C. 102(e) as being anticipated by Shimizu et al. (US 2002/0127433) is withdrawn in view of Applicant's amendments.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. The rejection of claim 6 under 35 U.S.C. 103(a) as being unpatentable over Kawato et al. (US 2002/0028356) in view of Shukh et al. (US 2002/0028357) or Ohno et al. (US 4842917) is withdrawn in view of Applicant's amendments.

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9. The rejection of claims 6 and 21 under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 2002/0127433) in view of Shukh et al. (US 2002/0028357) or Ohno et al. (US 4842917) is withdrawn in view of Applicant's amendments.

10. The rejection of claims 13, 15-20, and 22-24 under 35 U.S.C. 103(a) as being unpatentable over Kawato et al. (US 2002/0028356) in view of Shimizu et al. (US 2002/0127433) is withdrawn in view of Applicant's amendments.

11. The rejection of claim 21 under 35 U.S.C. 103(a) as being unpatentable over unpatentable over Kawato et al. (US 2002/0028356) in view of Shimizu et al. (US 2002/0127433), as applied to claims 13, 15-20, and 22-24 above, and further in view of Shukh et al. (US 2002/0028357) or Ohno et al. (US 4842917) is withdrawn in view of Applicant's amendments.

12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shukh et al. (US 2002/0028357) in view of Uesaka et al. (US 4621030).

Shukh et al. fail to teach the claimed antiferromagnetic alloys.

Uesaka et al. disclose a magnetic recording medium having an antiferromagnetic layer formed from FeMn, NiO or other materials (col. 2, lines 45-56).

Given Shukh's broad teaching of using an antiferromagnetic material, it would have been obvious to one of ordinary skill in the art at the time of invention to choose an antiferromagnetic material used in magnetic recording media. Thus, it would have been obvious to use NiO or FeMn in the invention taught by Shukh et al.

13. Claims 13 and 15-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shukh et al. (US 2002/0028357) in view of Shimizu et al. (US 2002/0127433).

Shukh et al. teach all of the limitations of the claims except for the orientation of the magnetization direction of the magnetic underlayer structure.

Shimizu et al. teach a comparable magnetic underlayer structure wherein the magnetization of the soft magnetic layers of the underlayer is advantageously oriented in the radial direction (p. 6, paragraph 80). The reference teaches that the radial orientation allows for improved magnetic permeability in the travel direction of the magnetic head.

It would have been obvious to one of ordinary skill in the art at the time of invention to orient the magnetic moment of the magnetic underlayers taught by Shukh et al. in the radial direction in order to improve magnetic permeability in the travel direction of the magnetic head as suggested by Shimizu.

14. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shukh et al. (US 2002/0028357) in view of Shimizu et al. (US 2002/0127433) and further in view of Uesaka et al. (US 4621030).

The combination of Shukh et al. in view of Shimizu et al. fails to teach the claimed antiferromagnetic alloys.

Uesaka et al. disclose a magnetic recording medium having an antiferromagnetic layer formed from FeMn, NiO or other materials (col. 2, lines 45-56).

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Given Shukh's broad teaching of using an antiferromagnetic material, it would have been obvious to one of ordinary skill in the art at the time of invention to choose an antiferromagnetic material used in magnetic recording media. Thus, it would have been obvious to use NiO or FeMn in the invention taught by Shukh et al.

15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shukh et al. (US 2002/0028357) in view of Ruble et al. (US 4964242).

Shukh et al. teach all of the limitations of the claims except for the orientation the magnetic moment of the magnetic underlayers in the circumferential direction.

Ruble et al. teach that it is known in the art that by reducing the radial component of magnetization and increasing the circumferential component in magnetic recording media, better differentiation between adjacent tracks on the magnetic surface can be achieved (col. 1, line 67 to col. 2, line 4).

It would have been obvious to one of ordinary skill in the art at the time of invention to orient the magnetization directions of the magnetic underlayers taught by Shukh et al. in the circumferential direction in order to achieve optimal differentiation between adjacent tracks on the medium surface.

***Allowable Subject Matter***

16. The indication of allowability of claims 10-11 and 25-26 is withdrawn in view of Applicant's arguments with respect to Shukh et al.

***Response to Arguments***

17. Applicant's arguments, including the declaration under 1.131, filed 11/13/02 have been fully considered but they are not persuasive.

Applicant argues that the Rule 131 declaration establishes a date of invention prior to August 25, 2000, which is the earliest effective filing date of Shukh et al.

The examiner respectfully disagrees. The declaration states that the claimed invention was conceived of and reduced to practice in the United States prior to August 25, 2000. A specific embodiment that was reduced to practice is described and the Declarants state that Fig. 4 of the present application is identical to one of the figures in an IBM invention disclosure describing this embodiment.

However, there is no supporting evidence provided with these statements. As set forth in 37 CFR § 1.131, "[o]riginal exhibits of drawings or records or photocopies thereof, must accompany any form part of the affidavit or declaration or their absence satisfactorily explained." See also MPEP 715. Applicant references Fig. 4 of the application and states that it is identical to a figure in an IBM invention disclosure. Figure 4 does not show the structure that is claimed and the embodiment that Declarants state was reduced to practice. Thus, additional evidence is required.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Holly Rickman whose telephone number is (703) 305-2642. The examiner can normally be reached on Monday-Friday 9:30-6:00.



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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on (703) 308-2367. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Holly Rickman  
Primary Examiner  
Art Unit 1773

hcr  
January 15, 2003